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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,115	04/12/2004	Steven C. Woo	RB1-029USC1	3525
29150	7590	09/08/2004	EXAMINER	
LEE & HAYES, PLLC 421 W. RIVERSIDE AVE, STE 500 SPOKANE, WA 99201			VERBRUGGE, KEVIN	
			ART UNIT	PAPER NUMBER
			2188	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/823,115

Applicant(s)

WOO ET AL.

Examiner

Kevin Verbrugge

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-32 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ •
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

On page 14, first full paragraph, the serial number of the related case is missing.

Appropriate correction is required.

Claim Objections

Claim 12 is objected to because of the following informalities: in line 2, "that are referenced" should be replaced by --that are not referenced-- to correct a presumed typographical error. Appropriate correction is required. The claim has been treated below as if the correction had been made.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 29-32 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 6,742,097. Although the conflicting claims are not identical, they are not patentably distinct from each other because the differences are immaterial.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-7 and 9-27 are rejected under 35 U.S.C. 102(a) as being anticipated by “Power Aware Page Allocation” by Lebeck et al., hereinafter simply Lebeck.

Regarding claims 1, 2, 3, 9, 12, 20, and 26, Lebeck mentions the claimed mappings from virtual/logical address space to physical memory at the last sentence of section 2.3 and in section 3.2, last paragraph, second sentence.

His disclosure clearly identifies certain portions of the logical address space based on usage as claimed (see section 4, third paragraph, third sentence and fifth paragraph, fourth sentence).

Lebeck’s device clearly modifies the mappings to reduce the number of physical memory devices that are targeted by the mappings (see section 2.1, third paragraph, second sentence; section 4, first paragraph, last sentence; section 4, third paragraph,

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second and third sentences; section 4, fifth paragraph, second sentence; section 4, sixth paragraph, last sentence; section 7, fourth paragraph, third sentence).

Regarding claims 4, 10, 13, 18, 21, and 23, Lebeck teaches monitoring more frequently used portions at section 6.3, first paragraph.

Regarding claims 5, 11, 14, 19, 22, and 24, Lebeck teaches monitoring more recently used portions at section 4, fifth paragraph, and section 6.2, first paragraph, second sentence.

Regarding claims 6 and 27, Lebeck's disclosure is full of references to the claimed memory allocations and the implied associated deallocations.

Regarding claim 7, Lebeck mentions addresses at section 3.2, fourth paragraph.

Regarding claims 15, 16, 17, and 25, Lebeck mentions repeating the process at section 4, fifth paragraph, to maintain the power reduction advantages as time proceeds. Clearly any data in the memories to be shut down must be moved before shutdown, otherwise it will be lost or access to it will be delayed while the memory is awakened.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Power Aware Page Allocation" by Lebeck et al., hereinafter simply Lebeck in view of "Optimizing the DRAM Refresh Count for Merged DRAM/Logic LSIs" to Ohsawa and U.S. Patent 6,167,484 to Boyer.

Lebeck does not mention the claimed in-use registers. However, he does disclose "per-page hardware counters, recording the frequency of accesses to each page" of memory at section 4, fifth paragraph, fourth sentence and teaches that "we can potentially eliminate refresh for entire DRAM banks in which there are no active pages" at section 7, fourth paragraph (implying activity would be monitored on a per-page level, suggesting the claimed in-use registers).

Ohsawa shows the claimed in use registers as refresh flags in Figs. 4 and 5. When a page or row is in use, its refresh flag is set to indicate that it should be refreshed. When a page or row is not in use, its refresh flag is unset so that it is not refreshed. Therefore, these refresh flags are essentially "in-use registers."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in-use registers in Lebeck's device to indicate whether the associated memory was in use or not. This type of hardware structure (registers) lends itself easily to the hardware control mentioned by Lebeck at section 4, third paragraph, third sentence and is similar to if not anticipated by Lebeck's per-page hardware counters. Furthermore, the claimed in-use registers are essentially suggested by Lebeck at section 7, fourth paragraph (as mentioned above).

Allowable Subject Matter

Claims 29-32 would be allowable if a terminal disclaimer were filed to overcome the double patenting rejection.

Conclusion

This is a continuation of applicant's earlier Application No. 09/919373. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

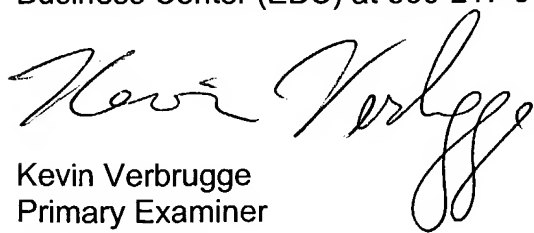
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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning a communication from the Examiner should be directed to the Examiner by phone at (703) 308-6663 before 10/14/04 and at (571) 272-4214 after 10/14/04.

Any response to this action should be labeled appropriately (serial number, Art Unit 2188, and After-Final, Official, or Draft) and mailed to Commissioner for Patents, Washington, D.C. 20231 or faxed to (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197.


Kevin Verbrugge
Primary Examiner
Art Unit 2188